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DEC 16 1993

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

DOCKET FILE COPY ORIGINAL

December 16, 1993

By Hand

The Honorable Reed E. Hundt
Chairman
Federal Communications Commission
1919 M Street, N.W., Room 814
Washington, D.C. 20554

Dear Chairman Hundt:

Re: CC Docket No. 92-297
Local Multipoint Distribution Service

In its reasoned LMDS NPRM adopted last December, the Commission proposed to reallocate the fallow 28 GHz spectrum band for the commercial deployment of the exciting new Local Multipoint Distribution Service ("LMDS"), which can immediately provide consumers with a high-quality, low-cost alternative to cable television. In its various filings in this proceeding, Suite 12 Group ("Suite 12"), the entrepreneurial inventor of this innovative technology for LMDS, has demonstrated that the 28 GHz band is the only appropriate spectrum for licensing this revolutionary new technology and service. Moreover, the record confirms that the 28 GHz band is not being utilized in the vigorous, pro-competitive and revenue-producing manner intended by Congress as reflected in the Budget Reconciliation Act of 1993.

Given the enormous promise of LMDS, potential competitors and those who wish to preserve the valuable 28 GHz spectrum for their own possible future use, are vigorously opposing the prudent allocation of LMDS in the 28 GHz band. As part of this effort, a Coalition of satellite operators has made the disingenuous suggestion that the Commission move LMDS to the 40.5-42.5 GHz spectrum just like "the European plan." What these parties have not told the Commission, however, is the critically important fact that there has been absolutely no commercial deployment of LMDS in Europe, or anywhere in the world. The fact that several EC countries have adopted the wrong standard, like the flawed EC HDTV standard, argues strongly for U.S. leadership in developing a workable standard for LMDS in the grossly under-utilized 28 GHz spectrum.

Moreover, those who would exile LMDS to the 40.5-42.5 GHz band have provided no evidence in the formal LMDS rulemaking record which supports the technical, economic and commercial viability of LMDS in the 40.5-42.5 GHz band. In fact, any suggestion that LMDS can be allocated in the U.S. in the 40.5-42.5 GHz band is rebutted definitively in the attached study, titled "LMDS Is Not Viable in the 40.5-42.5 GHz Band," which has been prepared by Suite 12's principals and its domestic and international consultants. This study confirms that

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LMDS can be deployed immediately and in a commercially viable manner only in the 28 GHz band, and that due to numerous technical disadvantages attendant to the 40.5-42.5 GHz spectrum, LMDS simply would not be viable as a video distribution service in the 40.5-42.5 GHz band in the United States.

Through the prudent licensing of LMDS in the 28 GHz band, as proposed by the Commission in the NPRM, the Commission has the important opportunity to encourage the immediate deployment of this competitive alternative to cable for the benefit of U.S. consumers and, at the same time, to establish the appropriate standard in the 28 GHz band for the global deployment of LMDS. For developing countries which lack communications infrastructures such as the 12 NIS Republics and China, and in the South African townships, Suite 12's U.S.-based wireless broadband technology is ideally suited to providing modern communications services without the need for capital-intensive infrastructures. Clearly, the creation of countless U.S. jobs and a stimulus to our nation's economy are important by-products of the successful licensing and deployment of LMDS in the U.S. and abroad.

Accordingly, for the Commission to abandon its thoughtful proposed allocation in the 28 GHz band without compelling and sound supporting data in the record would constitute unsound public policy, and would frustrate the numerous benefits that U.S. consumers will realize by the rapid deployment of LMDS.

Should you have any questions regarding this study, please contact the undersigned.

Sincerely,

A handwritten signature in black ink, reading "Michael R. Gardner". The signature is fluid and cursive, with the first name "Michael" being the most prominent part.

Michael R. Gardner
Counsel for Suite 12 Group

MRG:ra

Enclosure

cc FCC Acting Secretary William Caton
(For Inclusion in the LMDS Rulemaking Record)

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

LMDS IS NOT VIABLE IN THE 40.5-42.5 GHZ BAND

by
The Suite 12 Group

SUMMARY

The Commission has proposed to reallocate the 28 GHz frequency band for Local Multipoint Distribution Service ("LMDS"). As Suite 12 Group has previously demonstrated, and as reiterated herein, the 28 GHz band is ideally suited for LMDS. The suggestion by a coalition of satellite proponents, who seek to preserve the 28 GHz band for their own possible use in the future, that the Commission should reverse its course and instead exile LMDS to the 40.5-42.5 GHz band not only lacks support in the record in the LMDS rulemaking proceeding, it is substantively unsound. Moreover, as Suite 12's filings in this proceeding demonstrate, LMDS can coexist with NASA, Motorola Iridium and other satellite operators in the robust use of the now under-used 28 GHz band. Also, despite unsupported rhetoric that European countries are developing LMDS at 40.5-42.5 GHz, it is significant that there has been no commercial deployment of LMDS anywhere in the world. As demonstrated herein, there are numerous significant disadvantages that LMDS service would face in the 40.5-42.5 GHz band, including much shorter range, much smaller coverage area, limitation to only line-of-sight reception, inability to reuse the frequency in adjacent cells and insufficient channel capacity. As a result, LMDS simply would not be a viable video distribution service in the 40.5-42.5 GHz band, and such a misplaced, unsupported allocation would deny the U.S. public an exciting new competitive alternative to cable, and other voice and data services. Ironically, the 40.5-42.5 GHz band may be better suited to the needs of the Coalition of satellite operators, than it is for LMDS.

LMDS IS NOT VIABLE IN THE 40.5-42.5 GHz BAND

The purpose of this paper is to explain why the Local Multipoint Distribution Service ("LMDS") is not viable as a video distribution service in the 40.5-42.5 GHz band as recently suggested by NASA and other would-be prospective users of the 28 GHz spectrum who are seeking to block the Commission's proposed deployment of LMDS in the 28 GHz band.¹ This paper also demonstrates the viability of allocating LMDS in the 28 GHz band, and the numerous public policy benefits attendant to such action.

1. LMDS is Proven at 28 GHz

The FCC has proposed to reallocate the 27.5-29.5 GHz band for LMDS, and the public response from Wall Street analysts and communications industry leaders has been very affirmative.² In developing the CellularVision technology, Suite 12 Group ("Suite 12")

¹ See Rulemaking to Amend Part 1 and Part 21 of the Commission's Rules to Redesignate the 27.5 - 29.5 GHz Frequency Band and to Establish Rules and Policies for Local Multipoint Distribution Service, ("LMDS NPRM"), 8 FCC Rcd 557 (1993). While numerous parties in this proceeding seek to block the immediate deployment of Suite 12's CellularVision technology for LMDS as a high-quality, low-cost alternative to cable, none of the parties are able to confirm their own immediate use of the largely fallow 28 GHz spectrum. For example, NASA suggests periodic and limited use over the next five years. See Comments of the National Aeronautics and Space Administration, filed March 16, 1993, page 7. Motorola's Iridium system proposes to begin its satellite experiments in 1995, with initial systems operating in 1996, and full operations in 1998. See Comments of the Mobile Satellite Service Above 1 GHz Negotiated Rulemaking Committee, dated April 30, 1993, page 2. However, the suggested optimum timeframes of these parties should not provide the basis for their hoarding of the valuable and largely unused 28 GHz spectrum, which is capable of generating enormous federal revenues from auctions of licenses of 1 GHz bandwidth for Suite 12's exciting, pro-competitive technology.

² See attached Press Reports from The Wall Street Journal, Forbes, the New York Times, Investor's Business Daily, Broadcasting and Computer World

(continued...)

has demonstrated that the 28 GHz band is ideal for LMDS,³ an exciting new service which is capable of providing consumers with an immediate, high-quality, low-cost competitive alternative to cable television service. The 28 GHz band is largely unused and the inherent properties of that spectrum band are ideal for LMDS transmissions. First, with the signal propagation characteristics in the 28 GHz band, CellularVision's unique cellular format produces 3 to 6-mile radius cells, an ideal size for a service which has the unique capability of providing different services and programming on a cell by cell basis depending on the specific needs and/or demographics of that area. This allows service to be targeted to areas which are not wired for cable, like Brighton Beach, New York, and the largely low and middle income areas of New York. The system cell configuration also easily facilitates locally oriented programming so that LMDS will be a truly local service, unlike Direct Broadcast Satellite, which only provides general programming on a national basis and is more suited to rural areas, where blockage in the satellite path due to buildings, for example, is less probable than in urban areas.

Additionally, the properties of the 28 GHz band generate substantial beneficial signal bounce, which allows for reception of signals on a non-line-of-sight basis. As a result, Suite 12 believes that subscribers will be able to receive signals either by line-of-sight, or with bounces, in most situations. In those few situations in which a signal, even with bounces, cannot reach subscribers, repeaters will be used. In addition, in the 28 GHz band, rainfall attenuation is minimized by design with commercially available equipment.

Through its years of research and development which led to the CellularVision technology, Suite 12 determined that no available portion of the spectrum, besides the 28 GHz band, is suitable for LMDS. In its Petition for Rulemaking ("Petition"), dated

²(...continued)

which reflect this enthusiasm for the immediate deployment of LMDS in the 28 GHz band.

³ See Suite 12 Petition for Rulemaking, dated September 23, 1991.

September 23, 1991, Suite 12 explained why various other bands, including frequencies below 13.25 GHz, as well as 17.7-19.7 GHz, 21.2-23.6 GHz, 31.0-31.3 GHz, 38.6-40.0 GHz and frequencies above 40 GHz, would not work for LMDS.⁴ Accordingly, in the LMDS NPRM the Commission appropriately proposed to reallocate the 28 GHz spectrum for LMDS.

Suite 12's international consultants report that other countries are following the United States' lead in this regard. For example, the CRTC in Canada is moving towards reallocating the 28 GHz band for LMDS use. WIC has been issued a three-cell experimental license in Calgary, and WIC has licensed the CellularVision technology from Suite 12 to proceed with its plan to introduce Suite 12's technology throughout Canada. Additionally, significant interest in the 28 GHz band for LMDS exists throughout Eastern Europe, where Romania and Armenia have already begun licensing the 28 GHz spectrum for such use. Suite 12's international consultants also report that Mexico, Australia, New Zealand and Peru are also in the process of licensing the 28 GHz spectrum for the CellularVision technology and LMDS services.

2. The Allocation of the 40.5-42.5 GHz Band in Northern Europe

Notwithstanding the support in the record in this proceeding for the reallocation of the 28 GHz band for LMDS, a group of satellite operators recently suggested that LMDS should be placed in other parts of the spectrum, particularly the 40.5-42.5 GHz band.⁵ First,

⁴ See Petition, pages 7-10. In particular, with regard to frequencies over 40 GHz, Suite 12 stated that there would be excessive losses due to rainfall, and that equipment would be too expensive. See id.

⁵ For the first time in the long chronology of the LMDS rulemaking, on December 3, 1993, an *ad hoc* coalition of NASA, Motorola and others who generally wish to preserve their unfettered future access to the largely unused 28 GHz band formally appeared at the Commission as the "Coalition to Preserve the Primary Status of the 27.5-29.5 GHz Band for Satellite Services"

(continued...)

the exile of LMDS to a band other than 28 GHz is not necessary, as Suite 12's filings in this proceeding demonstrate that LMDS and the Fixed Satellite Services can coexist in the 28 GHz band without any significant interference problem.⁶

As to the merits of the 40.5-42.5 GHz suggestion, in view of the numerous technical disadvantages of operating an LMDS system in the 40.5 to 42.5 GHz band discussed below, this unsupported suggestion should not serve as a basis for spectrum allocation. Importantly, Suite 12's international consultants advise that there has been no commercial deployment of LMDS-type service in Europe in the 40.5-42.5 GHz band, despite the fact that several years ago the 40.5-42.5 GHz band apparently was allocated for such use in Northern Europe. In Great Britain, for example, the Broadcasting Act of 1990 authorized the use of the 40.5-42.5 GHz band in any cable franchise area, independent of any requirement to use a particular technology. Thus, franchisees could use any technology, wire or wireless, to implement their cable systems. To date, no franchisee has implemented a wireless system in the 40.5-42.5 GHz band.⁷ Thus, contrary to the suggestions of the Coalition of satellite interests seeking to exile LMDS to an unworkable portion of the spectrum in order to

⁵(...continued)

("Coalition"). This Coalition made the unsupported suggestion that the Commission allocate the 40 GHz band for LMDS since 40.5-42.5 GHz is "the European plan." In advancing this position, the Coalition provided no evidence in the record to support the viability of this radical and unsound suggestion. Importantly, the Coalition also failed to tell the Commission that there is no commercial deployment of LMDS in Europe, further proof that allocating LMDS at the 40.5-42.5 GHz band will simply not result in the commercial deployment of LMDS as a competitive alternative to cable.

⁶ See "LMDS Does Not Interfere with NASA ACTS," by Bernard Bossard, filed on November 24, 1993; Reply Comments of Suite 12 Group, dated April 15, 1993, at pages 20-41, and Appendices 3 and 4.

⁷ Attached as Appendix 1 is a letter from Robert Hamersma, Managing Director of Philips Electronics ("Hamersma Letter"), who states, among other things, that there are no 42 GHz systems in operation or even under construction in Europe today.

preserve the 28 GHz spectrum for their own potential use in the future,⁸ LMDS is not being deployed in the 40.5-42.5 GHz band in Europe or, for that matter, anywhere in the world.

In view of this complete absence of progress in deploying LMDS-type services in the 40.5-42.5 GHz band in Europe, Suite 12's international consultants further report that there is a strong movement in Europe to relocate the few operating point-to-point users in the 28 GHz band and to reallocate the 28 GHz band for LMDS services.

Suite 12's international consultants report that the 40.5-42.5 GHz band was selected in Northern Europe because the 28 GHz band had been reserved by European governments for use for point-to-point cellular backbone links by the telecommunications operating companies. Thus, the 40.5-42.5 GHz band presumably was chosen as an alternative because it was the only available band, and not because of its inherent desirability. Moreover, the 40.5-42.5 GHz band was selected in Northern Europe without the benefit of experimentation or a record which demonstrated that LMDS-type services could be commercially deployed in that band.

⁸ Congressman John Dingell (D-MI), Chairman of the House Energy and Commerce Committee, has been publicly critical of attempts to reserve the scarce and valuable spectrum for "future" governmental uses. In fact, Chairman Dingell has consistently sought to free-up government-reserved spectrum for commercial users in an effort to make more efficient use of the spectrum, and to reduce the amount of spectrum idly retained for government's future needs. In particular, Chairman Dingell has linked the availability of spectrum to the development of new technologies and U.S. competitiveness abroad, stating in one instance that the reallocation of 200 MHz of government spectrum for commercial use "will pressure the Government to become more efficient in its use of the spectrum . . . [and] [i]t will create a reserve of spectrum for new technologies, helping our industries to compete in the global marketplace." "Introduction of the Emerging Telecommunications Act," 135 Cong. Rec. 15758, 101st Cong., 1st Sess. (1989). A copy of Chairman Dingell's statement is attached as Appendix 2.

However, in the United States, in sharp contrast to the market needs in the European Community, both the Congress and the Commission have explicitly recognized the importance of regulating the cable monopoly by providing consumers with competitive video service alternatives. As the Congress explicitly recognized in the Cable Television Consumer Protection and Competition Act of 1992:

For a variety of reasons, including local franchising requirements and the extraordinary expense of constructing more than one cable television system to serve a particular geographic area, most cable television subscribers have no opportunity to select between competing cable systems. Without the presence of another multichannel video programming distributor, a cable system faces no local competition. The result is undue market power for the cable operator as compared to that of consumers and video programmers.

Cable Television Consumer Protection and Competition Act of 1992, Pub.L. No. 102-385, Sec. 2(a)(2), 106 Stat. §1460 (1992).⁹ Likewise, as the Commission explicitly stated in the LMDS NPRM, "a new source of competition for franchised cable companies, wireless cable companies, and other video service providers furthers our goal of using the disciplines of the marketplace to regulate the price, type, quality and quantity of video services available to the public." LMDS NPRM, 8 FCC Rcd at 559. Thus, the consumer marketplace in the United States is ripe for LMDS and its deployment simultaneously addresses numerous important pro-competitive policy goals of Congress and the Commission.

⁹ One of the purposes of the 1992 Cable Act is to "promote the availability to the public of a diversity of views and information through cable television and other video distribution media...[and] to rely on the marketplace, to the maximum extent feasible, to achieve that availability." Id., Sec. 2(b)(1) and (2).

3. LMDS is Not Viable as a Video Distribution Service in the 40.5-42.5 GHz Band

There are numerous reasons why the deployment of LMDS at 28 GHz has significant advantages over 40.5-42.5 GHz, to the point where LMDS simply would not be a viable video distribution service in the 40.5-42.5 GHz band.¹⁰

a. Rainfall Attenuation

The attenuation of the signal due to rainfall is substantially higher at 40.5-42.5 GHz than at 28 GHz.¹¹ This significantly higher rainfall attenuation at 40.5-42.5 GHz dramatically reduces the range of the signal, and thus the size of the cells. For example, in New York, a cell with a three-mile radius at 28 GHz would have a radius of about 1.7 miles at 40.5-42.5 GHz (assuming that a tube large enough to supply sufficient power at 40.5-42.5 GHz is feasible).¹²

Accordingly, due to rain fade, the area served at 40.5-42.5 GHz would be about 32% of that served by a system at 28 GHz. As a result, at 40.5-42.5 GHz, more than three transmitters would be required to serve the same area that would be served by a single 28 GHz transmitter, representing a substantial increase in transmitter cost

¹⁰ See generally "Analysis of Issues Affecting LMDS Operating at 40 GHz," by Eric N. Barnhart, P.E., Chief, Communications and Networking Division, Georgia Institute of Technology, Georgia Tech Research Institute, December 13, 1993 ("Barnhart Report"), attached as Appendix 3; Study of David Sarnoff Research Center, December 15, 1993 ("Sarnoff Study"), attached as Appendix 4.

¹¹ The Sarnoff Study explains that using attenuation due to rain as a function of the distance between the transmit antenna and the receiver antenna, at a range of 3 miles, the attenuation increases from 15.2 dB at 28 GHz to 22.5 dB at 42 GHz, resulting in a 7.3 dB increase in attenuation due to the rain. See Sarnoff Study, at page 1.

¹² See Sarnoff Study, at page 1.

alone. Also, attenuation through trees and foliage is much greater at 40.5-42.5 GHz than at 28 GHz.¹³

In sum, due to rain fade and path loss, the coverage area at 40.5-42.5 GHz is about one-third of the coverage area at 28 GHz.¹⁴ As a result, since more transmitters would be needed to cover the same area, the cost of deploying an LMDS system at 40.5-42.5 GHz will be significantly greater than at 28 GHz, to the point of being prohibitive. In countries with continental and subtropical climates, including the United States, the penalty of rainfall attenuation at 40.5-42.5 GHz is so severe that it alone will jeopardize the viability of LMDS.

It is interesting to note that in its *ex parte* submission, the satellite Coalition recognizes that the band closest to 28 GHz which is available for FSS uplinks is the 40 GHz band. The Coalition adds, however, that the "use of this spectrum for FSS is not economically feasible, because of the aggravation of rain attenuation and other technical problems at the higher frequencies."¹⁵ Given the Coalition's representation that the 40.5-42.5 GHz band is economically and technically unsound for FSS, its subsequent suggestion that LMDS should be allocated in the 40.5-42.5 GHz band is ludicrous. As explained in the Barnhart Report, the detrimental effect of rain

¹³ As noted in the Sarnoff Study, the U.S. Department of Commerce, National Telecommunications and Information Administration, issued a report detailing vegetation loss through foliage at various tree depths and on several different paths. At a 5-meter height, there is an increase in loss of about 7 dB going from 28.8 GHz to 57.6 GHz. Thus, based on these findings, the loss at 42 GHz should be about 3 dB. See Sarnoff Study, at pages 1-2.

¹⁴ As noted in the Sarnoff Study, "[i]f you take the point at which the TWTA output power is 78 watts, then the available coverage range at 28 GHz is out to 3 miles; but at 42 GHz the coverage range is only out to 1.7 miles...[s]o... the effective coverage range at 42 GHz is about half the range at 28 GHz due to the increase in path loss and rain fade at the higher frequency." See Sarnoff Study, at page 1.

¹⁵ See December 3, 1993 letter of Coalition, at para. 4.

attenuation is most severe at low altitudes over horizontal paths, precisely the type of path over which Suite 12's technology operates using omni-directional antennas. By contrast, satellite systems operate a vertical point-to-point paths with highly directional, high-gain antennas. A point-to-point link, as in the satellite case, can overcome the additional minimum slant range rain attenuation by the intrinsic increase in antenna gain. This is not possible with LMDS, since LMDS transmissions are omni-directional, rather than point-to-point.¹⁶ As a result, satellite systems are much more capable of being successfully operated in the 40 GHz band than an LMDS system.¹⁷ Accordingly, if, as the Coalition claims, the 40.5-42.5 GHz band is not suitable for FSS, then it certainly is even less suitable for LMDS.

b. Inability to Reuse the Frequency in Adjacent Cells

At 28 GHz, Suite 12's CellularVision technology provides the ultimate in spectrum efficiency, by allowing the reuse of the same frequencies in adjacent cells. This is accomplished using a combination of polarization, modulation, space diversity and frequency diversity.¹⁸ The inapplicability of these same techniques at 40.5-42.5 GHz is confirmed by a review of the frequency plan adopted in Great Britain, which does not utilize these concepts. The British frequency plan for the 40.5-42.5 GHz band results in a drastic reduction in the number of usable channels along with a severe reduction in spectrum efficiency. The British frequency plan divides the 40.5-42.5

¹⁶ A good example of the ease of extending point-to-point (earth to satellite) range is found in the 2 GHz band, where PCS/PCN cells are quite small due to the use of omni-directional antennas and the low altitude of propagation; by contrast, point-to-point links at substantially the same frequencies approaching 30 miles are common.

¹⁷ See Barnhart Report, at page 2, "Key Differences between LMDS and Satellite or Point-to-Point Paths."

¹⁸ See Suite 12 Petition for Rulemaking, and accompanying "Suite 12 System Analysis for Video Distribution and Secondary Services," prepared by David Sarnoff Research Center, dated September 17, 1991.

GHz band into two frequency bands, Band A (40.5-41.5) and Band B (41.5-42.5), with a four-cell cluster. In the northwest cell, Band A is used, with horizontal polarization, and no interleaving; in the northeast cell, Band B is used, with horizontal polarization, and no interleaving; the southwest cell uses Band B, with vertical polarization, and even interleaving; and the southeast cell uses Band A, with vertical polarization and even interleaving. With this four-cluster frequency plan which results in only 32 video channels per 2 GHz, in order to reuse the frequency, separation distances between clusters of 20-30 kilometers are suggested. Thus, the sporadic coverage of a 40.5-42.5 GHz system would be ill-suited to serve anything larger than small towns.

c. Limitations in Number of Channels at 40.5-42.5 GHz

At 28 GHz, Suite 12's CellularVision technology utilizes channels of 20 MHz bandwidth to provide studio quality video. In order to provide a viable alternative to cable, Suite 12 believes that at a minimum it is critical that each LMDS operator have the capability to offer 50 video channels of superior, large-screen quality. At 28 GHz, then, an LMDS operator needs at least 1 GHz in order to be able to offer a truly competitive service.

By contrast, in Great Britain, at 40.5-42.5 GHz each video channel will require 27.5 MHz bandwidth, which will reduce the intrinsic capacity of the system to only 32 channels per 2 GHz bandwidth (note: adjacent cell isolation would be maintained by using different frequencies). Thus, at 40.5-42.5 GHz in Great Britain, an LMDS operator would require 3 GHz of spectrum to obtain the same channel capacity which an LMDS operator in the United States has with 1 GHz at 28 GHz. In terms of channel capacity, a 40.5-42.5 GHz LMDS system would, at best, be comparable to a line-of-sight Multichannel Multipoint Distribution Service ("MMDS"), which simply is insufficient to compete with cable on a broad scale, particularly since the range of a line-of-sight 40.5-42.5 GHz LMDS system would be substantially less than an MMDS system offering the same channel capacity.

d. Equipment Availability and Cost

In addition, Suite 12's international consultants report that there is no commercially available equipment for LMDS operation at 40.5-42.5 GHz.¹⁹ For example, the state of the art has not yet developed low-noise amplifiers suitable for the 40.5-42.5 GHz band. The development could be as much as two years away from existence. Also, sufficient transmitter power is not available now, as travelling wave tube amplifiers ("TWTAs") at 40.5-42.5 GHz provide lower performance and at a higher cost.²⁰ If and when equipment for LMDS at 40.5-42.5 GHz is developed and becomes commercially available, it is likely to cost significantly more than equipment designed for use at 28 GHz. This factor, coupled with the signal range limitations, makes the 40.5-42.5 GHz band unsuitable for video distribution as a competitor to cable, as the lack of deployment in Northern Europe demonstrates.

By contrast, equipment for the immediate deployment of LMDS based on an allocation at 28 GHz in the U.S. is readily available. For example, Suite 12 is purchasing equipment from a wide array of U.S. suppliers, including Alpha Industries, M/A-COM, Hughes Aircraft and Titan Industries. The need for LMDS licensees across the U.S. to purchase equipment to deploy their LMDS systems could have an enormous positive impact on the creation of U.S. jobs by these U.S. equipment manufacturers.

¹⁹ See Hamersma Letter, at page 1.

²⁰ The Sarnoff Study notes that the best output power achievable today at 42 GHz is in the range of 50 watts, and that the gain is typically 6 dB lower than at 28 GHz—resulting in 40.5-42.5 GHz TWTAs being lower in performance and higher in cost. See Sarnoff Study, at page 1.

e. Signal Bounces

As discussed above, at 28 GHz LMDS utilizes bounces of signals off of buildings and other surfaces to provide coverage on a non-line-of-sight basis. Due to the roughness factor of brick, granite and stone, LMDS at 28 GHz benefits from an extremely coherent signal bounce. This fact has been demonstrated to leading communications companies like Bell Atlantic and Philips Electronics North America Corporation ("Philips"), which are minority investors in CellularVision of New York, L.P. ("CVNY").²¹ Surely, Bell Atlantic's and Philips' due diligence surrounding the technical viability and soundness of the CVNY system was thorough and substantial before deciding to invest in CVNY.

For anyone who has actually experimented with or studied LMDS signal propagation at 40.5-42.5 GHz, it is abundantly clear that the roughness factor for scattering at 40.5-42.5 GHz will create a more diffuse and, hence, unusable bounce off of brick, mortar or stone, thereby inhibiting the reception via reflection.²² As a result, at 40.5-42.5 GHz, LMDS, like MMDS, would be restricted to a purely line-of-sight service, causing the potential scope of this exciting new service as a broad-based alternative for consumers to be severely curtailed.²³

²¹ CVNY is the licensee of an authorization to offer video services in the 28 GHz band to consumers in the New York Primary Metropolitan Statistical Area.

²² See Barnhart Report, at page 2, "Degradation of Non-LOS LMDS Performance at 40 GHz. Moreover, the phase dispersion at 40 GHz appears to be problematic.

²³ As noted in a report of the 40 GHz Multipoint Video Distribution System working group in Great Britain, "Sectorial horns should be employed where possible to make the most efficient use of the available spectrum. Indeed, the use of omni-directional antennas, except in the most isolated areas, may limit the reuse of the spectrum available. As already noted, the receiver antenna needs to be at a height that provides a clear line of sight for the transmitter."

(continued...)

4. Prompt Allocation of 28 GHz for LMDS by the FCC Will Serve Important Public Interests

Finally, there are numerous compelling public policy reasons for the immediate deployment of LMDS with 1 GHz allocations in the 28 GHz band in the United States despite any prior allocation pattern in Europe. If the FCC acts prudently and with dispatch, important governmental goals will be readily achieved.

First, consumers across the United States, like those currently served by the CVNY system in the "cable-less" Brighton Beach, New York area, will immediately receive the benefits of a high-quality, low-cost video alternative to cable television. To a Congress and an FCC which have spent significant time and resources during recent years in an attempt to regulate cable through comprehensive legislation and resulting regulations, there is no more effective way to regulate cable than by encouraging the provision of an immediate, low-cost, viable alternative service like Suite 12's CellularVision technology, which will provide consumers with a high-quality choice in cable-monopolized and/or underserved markets.

Second, in connection with Congressionally mandated spectrum auctions designed to generate revenue for the Federal Treasury, the 28 GHz spectrum, which now is largely fallow, is likely to remain under-utilized despite highly optimistic claims by NASA and the LEO applicants, including Motorola. The 28 GHz spectrum represents a rich public resource if allocated prudently for LMDS with the 1 GHz allocations per licensee needed to successfully deploy LMDS as a truly competitive service. The needs of FSS interests, both current and prospective, can also be satisfied through the prudent allocation of the 28 GHz band which facilitates coexistence between FSS and LMDS. Such an allocation, allowing for the immediate allocation of the 28 GHz spectrum for LMDS, could generate enormous

²³(...continued)

See Report of the 40 GHz MVDS Working Group, Draft #7, February 1993, at para. 8.7.

revenues for the Federal Treasury. Thus, with an appropriate spectrum allocation for LMDS at 28 GHz, as the FCC proposed in its NPRM, the government will be able to simultaneously address important deficit reduction goals, while also serving important pro-competitive, marketplace goals by providing consumers with a competitive alternative to cable.

Third, if the FCC rejects the flawed European approach to LMDS at 40.5-42.5 GHz, where no commercial deployment has occurred or is anticipated to occur,²⁴ and licenses LMDS in the 28 GHz band, U.S. governmental and commercial interests will be advanced globally as we assume a leadership position in bringing the video, voice and data services of a U.S.-based technology to needy global consumers, particularly those in developing countries like the 12 NIS Republics and China, and in the South African townships, where modern voice and data communications services are virtually non-existent. Because of its wireless, cellular configuration, Suite 12's CellularVision technology is ideally suited to provide an exciting alternative for these international consumers who simply cannot finance highly capital intensive, traditional communications infrastructures.

Finally, we note that the FCC itself concluded (1) in January 1991 that the record supported the grant a waiver license to Suite 12's affiliate, Hye Crest Management, Inc., to deploy the CellularVision technology on a commercial basis in the 28 GHz band in New York, and (2) in January 1993, in the LMDS NPRM, that the record supported the proposed reallocation of the 28 GHz spectrum for LMDS, along with a tentative award of a pioneer's preference to Suite 12. Such prior, thoughtfully researched endorsements by the FCC for the appropriateness of deploying Suite 12's CellularVision technology and LMDS at 28 GHz

²⁴ Wisely, in the past the U.S. has rejected flawed and misguided European standards which, if followed, would have stunted an important U.S. consumer alternative. U.S. deferral in even considering the EC-HDTV standard is a recent example in which U.S. leadership was exercised as part of good public policy. See Advanced Television Systems and Their Impact on the Existing Television Broadcast Service, 5 FCC Rcd. 5627 (1990).

certainly must have involved a thorough review of the CellularVision technology and its application in the 28 GHz spectrum band. Accordingly, for the FCC to conclude now that the totally unsupported and undocumented claims of the threatened Coalition of satellite interests would provide an adequate basis to abandon the Commission's reasoned decision to use the largely fallow 28 GHz for LMDS, would be arbitrary and capricious, and legally unsupportable on appeal.

5. Conclusion

As discussed above, the numerous differences in the propagation characteristics between the 28 GHz band and the 40.5-42.5 GHz band would preclude LMDS from becoming a viable video distribution service if exiled to the 40.5-42.5 GHz band. The fact that there has been no commercial LMDS-type services being offered anywhere in the world today in the 40.5-42.5 GHz band is telling. Moreover, the record in the instant proceeding contains absolutely no evidence supporting of the viability of LMDS in the 40.5-42.5 band in the U.S.—that is not surprising, since that is an argument which cannot be supported by facts.

In the recent past, the Commission has taken several actions which have validated and endorsed the soundness of the CellularVision technology and LMDS in the 28 GHz band. Accordingly, based on the current record in this proceeding, if the Commission were to suddenly reverse course and heed the apparent urging of the Coalition of satellite interests seeking to preserve the 28 GHz band for their speculative, future use, even though coexistence is possible, and banish LMDS to the unworkable 40.5-42.5 GHz band, that decision would be arbitrary and capricious. More importantly, it would grossly ill-serve the public interest by denying U.S. consumers the immediate access to the high-quality, low-cost alternative to cable which LMDS represents.

APPENDIX 1

**LETTER FROM ROBERT HAMERSMA,
MANAGING DIRECTOR OF PHILIPS ELECTRONICS**



PHILIPS

Philips International B.V.

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onderw. re.
conc. betr.

Concerning:
LMDS rule making.

doortiesnummer in-dialling
accès intern dir. durchwahl

(040) 783668
(040) 782879 fax

datum, date

December 6, 1993.

Dear *Mr. Gardner,*

My opinion on the EC recommendation, to license 42 GHz for Wireless distribution of consumer TV services and 28 GHz for PTT service needs, can be rather short:

- The recommendation has been made by the Telecom operating companies. In operational terms, the PTT service costs are lower at lower frequencies than at higher frequencies. It is therefore very natural that the PTT's made the choice to keep 28 GHz for themselves.
- Cable operators in Europe, like in the US, are the natural challengers of the PTT's when it comes to video distribution. However, in the case of wireless cable, the cable operators have a great interest in moving the wireless band to higher, uneconomic frequencies in order to postpone the advent of competition and the economic devaluation of their networks. Since there was no innovative entrepreneur in Europe like Suite 12, the recommendation for 42 GHz was not challenged.
- Today in Europe there are no 42 GHz networks in operation nor under construction. Product development plans for 42 GHz components for video distribution (transmitters, antennae and down converters) are not known to us today and therefore such components do not exist today.
- Today in UK the utilisation and plans for utilisation by BT are so small, that the government bodies, intend to license the 28 GHz band also for other applications, like professional point to (multi) point video, PCN, etc..

This underlines the point that telecommunication link services will only be able to claim the need for a very small part of the spectrum, and that this spectrum in due time becomes available for video distribution, today for professional uses, tomorrow for consumer applications.

- A simple calculation can be made that fine mazed video distribution at 28 GHz has an higher public value than microwave distribution links or cellular interconnects. This is so, simply, because the one time high costs for a link are substantially offset by the tens of thousands of times of high consumer equipment costs.
- As far as we are aware, Hongkong uses 12 GHz and 28 GHz for video distribution, mainly to MATV installations in the apartments, not yet to individual houses. No 42 GHz installations or construction are known.
- With the Suite 12 and CVNY initiatives in the USA, the US component, equipment, system and operating companies are very well placed to become the trend setting and leading world players in this new, high tech, mass volume electronic industry. For the US military supply industry, which has a lot of knowhow in microwave applications and equipment, this new market could ease substantially their transition to new civil applications.

The key, however, is the wisdom of political and governmental bodies to properly allocate the spectrum for a wide public interest cause rather than of a niche exotic cause.

- In terms of claims of LMDS interference by satellite interests, in no publications or in our experiences, have we encountered support for the kind of technical arguments as brought forward by the NASA or Motorola. Such arguments can be easily overcome by proper frequency or geographical allocations.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'R. Hamersma', with a large, sweeping initial 'R' and several horizontal strokes below it.

Robert Hamersma

Managing Director of
Philips Electronics.

APPENDIX 2

**STATEMENT OF HOUSE ENERGY & COMMERCE
COMMITTEE CHAIRMAN JOHN DINGELL**

It is a disease that, if caught during the first stage, can be treated with antibiotics which will stop the disease.

However, Mr. Speaker, clearly we need more work here in Washington, and that is why many of us are promoting legislation that will provide additional dollars so that we can develop a better test for Lyme disease and also, of course, ultimately to produce a vaccine because we will not stop the ticks. We must stop the disease.

So, Mr. Speaker, I say to the people of the Nation, "If in the months ahead as we go through summer, you do find yourself or your child having a bull's-eye kind of rash, please, if you experience symptoms of lethargy, if you are dragging around, if you have pain in the joints like arthritis, because this disease does mimic many other diseases, go to your doctor, suggest a test for Lyme disease. It can well be Lyme."

Mr. Speaker, many doctors across this Nation are not aware of Lyme disease, so suggest it to them, and have the test done.

I say to my colleagues, "If you do have Lyme disease, you can stop it very quickly with antibiotics. If it gets to its second or third stage, you can find yourself in big trouble with a very deteriorated life, although it will not kill you."

So, since we are moving into Lyme Disease Awareness Week, I encourage everyone to be aware of Lyme. Learn about it. Be prepared. If the symptoms occur, take action. It is the second-fastest growing new infectious disease in the United States. It will be in all 50 States shortly.

Be aware; be educated; and let us defeat Lyme disease.

Lyme Disease Awareness Week, here we come. Let us learn, let us get educated.

Mr. RIDGE. Mr. Speaker, I thank the gentleman from New York (Mr. HONAN) for his educational efforts. I also thank him for his effort in seeking additional funding for research in this fast-growing infectious disease.

Mr. Speaker, I withdraw my reservation of objection.

The SPEAKER pro tempore. Is there objection to the request of the gentleman from Ohio?

There was no objection.

The Clerk read the Senate joint resolution, as follows:

S.J. Res. 142

Whereas Lyme disease is spread by the tick species *Ixodes Dammini* by means of the bacterium *Burkholderia burgdorferi*:

Whereas these ticks are no larger than the head of a pin:

Whereas these ticks can be carried by domestic animals such as cats, dogs, and horses:

Whereas these ticks can be transferred from domestic animals to humans:

Whereas Lyme disease was first diagnosed in southeastern Connecticut and has spread to forty-three States:

Whereas the Centers for Disease Control has reported fourteen thousand cases of Lyme disease since 1982:

Whereas Lyme disease is easily treated in its early stages by an oral vaccine administered by a physician (penicillin and erythromycin for young children and tetracycline for persons allergic to penicillin):

Whereas the early symptoms of Lyme disease are a rash, mild headaches, a slight fever, and swollen glands:

Whereas Lyme disease often mimics rheumatoid arthritis and heart disease:

Whereas if left untreated, Lyme disease can cause severe depression, brain disorders, and even death:

Whereas the best cure for Lyme disease is prevention.

Whereas prevention of Lyme disease depends upon public awareness; and

Whereas education is essential to making the general public and health care professionals more knowledgeable of Lyme disease and its debilitating side effects: Now, therefore, be it:

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the week beginning July 23, 1989, is designated as "Lyme Disease Awareness Week", and the President is authorized and requested to issue a proclamation calling upon the people of the United States to observe such week with appropriate programs, ceremonies, and activities.

The Senate joint resolution was ordered to be read a third time, was read the third time, and passed, and a motion to reconsider was laid on the table.

GENERAL LEAVE

Mr. FRANK. Mr. Speaker, I ask unanimous consent that all Members may have 5 legislative days in which to revise and extend their remarks on the Senate joint resolutions just passed.

The SPEAKER pro tempore. Is there objection to the request of the gentleman from Massachusetts?

There was no objection.

THE 31ST OBSERVANCE OF CAPTIVE NATIONS WEEK

The SPEAKER pro tempore. Under a previous order of the House, the gentleman from Illinois (Mr. ANNUNZIO) is recognized for 5 minutes.

Mr. ANNUNZIO. Mr. Speaker, on July 17, 1958, President Eisenhower signed into public law, legislation to designate the third week in July as Captive Nations Week. This week we commemorated the 31st observance to again focus world attention on the many nations who still suffer under the burdensome tyranny of the Communists, and to renew our commitment to achieve freedom for the millions of men, women, and children who live their lives under the shadow of this oppression.

Millions of Americans can trace their origins to these captive nations, and free people, if they are to remain free, must continue to defend the liberty of others. Each year, the people of the United States join with the

people of these captive nations in reaffirming our commitment to the cause of self-determination and human dignity.

Although under the policies of Mikhail Gorbachev, some steps toward freedom have been taken by the government in Poland, Armenia, the Baltic States, and other republics incorporated against their will into the Soviet Union, these nations are not free. The people are not free to travel, not free to assemble, and not free to determine the course of their own destinies in an independent homeland.

Mr. Speaker, on the occasion of the 31st observance of Captive Nations Week, I am proud to join with my constituents in the 11th Congressional District of Illinois which I am honored to represent, and all freedom-loving people throughout the world, who are remembering the plight of the people of the captive nations.

We must continue to speak the truth, and let the world know of the numerous human rights violations by the Communists, with the hope that the courageous people who suffer under the tyranny of their oppressors will one day live in freedom.

INTRODUCTION OF THE EMERGING TELECOMMUNICATIONS ACT

The SPEAKER pro tempore. Under a previous order of the House, the gentleman from Michigan (Mr. DINGELL) is recognized for 5 minutes.

Mr. DINGELL. Mr. Speaker, members of the Committee on Energy and Commerce are aware of the shortage of frequencies for commercial assignment. Existing congestion creates short-term problems for users, but this is a significant long-term problem as well. Given the current congested state of spectrum, the ability of the FCC to accommodate new technologies that are spectrum-dependent is severely limited.

Until spectrum is identified, and a reallocation proceeding commenced by the Commission, manufacturers lack an important incentive to invest the necessary time and funds to develop new technologies.

Other governments recognize the link between spectrum availability and international competitiveness in new technologies. British Minister of Trade and Industry, Lord Young recently said that:

The Government is prepared to make available a considerable block of radio spectrum to meet the developing needs of market for mobile communications. In any event, we will ensure that the U.K. keeps position at the leading edge into the future and beyond.

Japan's Ministry of Posts and Telecommunications has a similar approach to support Japanese leadership in new technologies.

Meanwhile, the FCC must deal with competing claims by existing users. It is unable to plan for the future by retaining unused frequencies for new technologies.

This lack of spectrum is affecting debate about high definition television (HDTV) standards. Many of the proposed HDTV technologies would require more spectrum than the 6 megahertz currently used by terrestrial broadcasters. If more spectrum is needed

this new technology, the FCC must displace existing commercial users. Government must be helping our industries to compete, not impeding their growth by inefficient use of resources.

Together with my colleague, ED MARKEY, I have drafted a bill that establishes a mechanism for the Federal Government to identify 200 megahertz of its spectrum that can be vacated and turned over to the FCC for commercial assignment. Since the Government controls approximately 40 percent of the usable spectrum, yet is not subject to the same discipline as commercial users, this mechanism will pressure the Government to become more efficient in its use of the spectrum. It will create a reserve of spectrum for new technologies, helping our industries to compete in the global marketplace.

SUMMARY OF THE EMERGING TELECOMMUNICATIONS TECHNOLOGIES ACT

Within 24 months of the date of enactment, the Secretary of Commerce must recommend a total of 200 MHz of spectrum in the Government's reserve that can be made available for commercial assignment. The criteria for deciding which channels to give back are: whether the use of the frequency is for a service that could be obtained from a private vendor; whether the use of the frequency could be curtailed by using wireline alternatives; whether the frequencies are not required for the present or future needs of the Government; and whether the use of the frequency could be shared geographically, so that congestion could be alleviated in some areas while retaining the frequency for Government use in other areas.

The bill requires the Secretary of Commerce to convene an advisory group from affected industries and the FCC. This will provide him with an independent data base to evaluate recommendations made by the bureaucracy. This group will also make recommendations to the Congress on how the current system of allocating frequencies should be reformed.

Within 6 months of receiving the recommendations of the Secretary of Commerce, the President shall withdraw or modify the Government assignments and notify the FCC of his actions. The President can substitute alternative frequencies if there is a compelling national security case.

Within a year of the President's notification, the FCC must prepare a plan that embargoes the release of some of the spectrum for 10 years; and ensures the availability of frequencies for new technologies.

This bill prohibits the auctioning of the spectrum.

Mr. Speaker, I would also like to take this opportunity to dispel an unfounded rumor that is circulating—apparently with some effect—that the Emerging Telecommunications Technologies Act will affect a specific industry sector. It will not. It is my strong belief that all spectrum-dependent businesses—including cellular—are potential beneficiaries if Government spectrum is made available. Indeed, the alleviation of congestion will benefit every user of spectrum.

It is my hope and intention that every Member of the House will have the opportunity to support this bill when it comes before the full House.

THE ARROGANCE OF CBS

The SPEAKER pro tempore. Under a previous order of the House, the gentleman from Massachusetts (Mr. FRANK) is recognized for 60 minutes.

Mr. FRANK. Mr. Speaker, I will not take anything like 60 minutes, but I wanted to elaborate on my discussion in my 1-minute earlier today about my unhappy experience with distortion on the "CBS Evening News".

Mr. Speaker, I was called last week by a person who worked for CBS News and asked my opinion of the provision of the law we passed last year on procurement which puts restrictions on the post-Federal-employment activities of a variety of people.

Mr. Speaker, I believe we should be very tough when dealing with elected officials and Presidential appointees, and I believe there are things we should be doing with regard to others, but I have been persuaded by a number of people, former Under Secretary of the Navy Jim Woolsey and others, that the bill that I supported last year went a little bit too far in its restrictions as it applied to people particularly with technical specialties when we said that there would be a lifetime prohibition on their aiding or advising certain companies.

□ 1220

The specific details I think are less important than the general principle, which is that when we are dealing with people with technical specialties who have worked for the Federal Government, it is an error too much to restrict them.

We already face a problem, Mr. Speaker, of paying people inadequately at these levels. We have difficulty retaining and attracting the kind of specialists we ought to have, and this affects the National Aeronautics and Space Administration in the important work they do. It will affect increasingly the National Institutes of Health.

Technical people are not here for the political thrill of it. They may be less willing than those of us trained as lawyers or others to give the law the benefit of the doubt, and we have run into problems.

At any rate, CBS said, "What do you think about it?"

I said, "Well, I think we overlegislated here and we ought to relax some of those rules."

So on Friday a camera person and a person to do interviews showed up in my office. The interviewer asked me at some length what I thought about this particular piece of the law, and I said that I thought we had gone too far. I thought we should give more flexibility to people who were scientifically and technically trained, that we should prohibit them from lobbying, but the relaxation in the law that they were looking for with regard to their

ability to aid and advise other companies made sense.

I was then asked by the interviewer, "Well, but why do you have these laws in general?"

It seemed to me that it was a pretty fatuous question, but the first amendment guarantees the right of the press to ask fatuous questions, so I answered it, and I said, "Because in general you don't want people making government decisions on anything other than public policy grounds. You don't want people to make public policy decisions influenced by the prospect of later employment, nor do you want people who are making these public policy decisions going later to a private company with undue influence in terms of their ability to change a decision."

I stressed that I answered that question as to the general justification for this sort of law because the interviewer pressed me, but I made clear throughout the interview that I thought in this particular case the law had been excessive.

Then I watched the CBS News on Saturday night with Bob Schieffer as the anchorperson, since Mr. Rather was somewhere else with President Bush.

I was appalled at the absolute dishonesty with which CBS presented my position. They quoted a number of people saying that the law was too harsh and they then cut to me. They quoted only that minuscule segment of the interview in which I at their request explained why these laws existed in general.

They absolutely omitted from the program anything that I had said, and this consisted of well over 95 percent of my remarks, which indicated that I thought the law was too harsh.

In context, I was clearly presented as a defender of the law.

Now, it seems to me what happened is clearly this. They called me because I had been the chairman of a subcommittee that writes ethics laws and they must have thought that I was defender of the law as written, as I once was, but that was some time ago and I changed my mind several months ago and have been working to amend the law. I explained that to them. I explained that I was not a defender of the law.

Apparently they misunderstood me and they sent the camera crew.

I explained that I was against the law. They then asked me a question which seemed strange at the time, but I now realize was designed to get me saying at least something that could be misconstrued as supportive.

Then on Saturday when they came to put the piece together, I guess they were a little nervous because they had only opponents of the law and no defenders.